Rec Jan 9
Ans Feb 20

Charlotte, Vermont,
Dec., 28, 1878.
Post mark Jan 2?

Dr. Geo. Engelmann,

Dear Sir;

Your letter on Topics in the line of my study was most welcome; I am only sorry to show you how little progress I have got made. I have postponed my reply with the hope that I might get out into the forests and learn something worth telling you, but winter has closed in upon us and forbids satisfactory observation of fir or oak.

In 1876 Prof. Sargent set me to work after Quercus ambigua, Mich. fr, and I searched as much as I could find opportunity — sending him a good many forms of Q. rubra, and specimens of Q. coccinea, which, as he informed me, you happening at Cambridge about that time, pronounced to be

clearly the var. tinctoria. As far as I know this is the only black or scarlet oak in Vermont, and I have seen it nowhere in this region except on the sandy bluffs and plains about the mouths of the Winooski and Lamoille rivers flowing into Lake Champlain. My specimens of acorns again will with you Q. tinctoria of Missouri. I will send it under No 1. Yes!

In the fall of 1877 I tried again for Q. ambigua and spent about a week looking through the oaks of the shores of L. Champlain; out of the hundreds, perhaps thousands, of trees which I examined, all were Q. rubra. The acorns and cups varied greatly, as I shall show you under No 2, but none, as I could see, varied toward Q. coccinea. I gave most attention to the leaves and fruit, but my attention was not attracted by any difference in bark.

It was my intention to pay through attention to this matter again the past

autumn, but our oaks were without fruit.

While speaking of oaks I may add that Q. macrocarpa is abundant with bicolor in this valley; that Q. Prinus is common on the warm rocky hills of W. Vt.; that Q. prinoides extends to this vicinity; and that I know of a few trees of Q. Muhlenbergii on an island of L. Champlain.

To mention hybrid oaks, — I know of a large grove near here, where grow with good specimens of Q. alba and Q. macrocarpa many intermediate forms; on the little island just mentioned are trees which I have been in doubt whether to call bicolor or macrocarpa; and a few weeks ago I came upon a singular tree (note in fruit) standing in proximity to Q. alba and Q. Prinus which I am at a loss to describe by saying it was quite like Acer Saccharinum: specimens of its leaves I will send you under No 3. I intend to look after these forms.

To answer your question about Abies rubra, Lambert, I need to take another year. Until the post season I thought I understood Abies nigra and alba, but on the mountains last June I found myself in perplexity. When I can go there again, I think I can now get the mountain spruces right by the aid of your letter. By the specimen which I send I anticipate you will allow that in the cold swamps of this valley of Lake Champlain we have A. nigra. From the mountains I am only able to show you the few cones numbered 2.

I wish to improve this opportunity to submit to you some specimens of Isoëtes found growing together in Lake Champlain, July, 1878, to ask if all are var. Braunii of Echinospora, and also some specimens of Sparganium simplex from Hermit Lake, White Mts., Aug., 24/78, to learn if it is the variety fluitans.

Yours sincerely, E. G. Pringle.

Rec'd March 6th
Ans Apr 4

Charlotte, Vermont.
March, 2, 1879.

Dr. Geo. Engelmann,

Dear Sir;

I must express my sincere thanks for your interesting letter of Feb. 20th.

I will answer each of your enquiries, as I am now able, and charge myself to watch the various Oaks, Spruces, etc., in question and report to you with specimens in autumn.

The Lake Champlain specimens of Isoetes echinospora, var. Braunii were not growing in deep water and were not deeply embedded in sand; but they were growing from a flow of fine sand covered with less than two feet of water. The station is nearly 50 miles from me, but I expect to pass that way again the coming Summer, and to make a point of getting mature specimens.

I did not receive acorns of the

Minnesota black oak, and therefore am unable to say whether we have anything like it in this region.

I am planning to work down the St. Lawrence and on the Saguenay during midsummer, and may possibly reach Labrador. If it occurs to you to make any suggestions of observations or collections to be made in that field, I would be glad to receive them.

Yours sincerely,

C. G. Pringle.

Rec June 2

Charlotte, Vermont,
May, 29, 1879.

Geo. Engelmann, M. D.,
My Dear Sir;

During a recent walk of many miles over Mt. Mansfield and its neighboring mountains I gave particular attention to the Spruces. It is, I think, P. nigra, var. rubra which forms the greater part of the forest on the higher portions of the mountains; I detected nothing like P. alba. With respect to your query whether there are intermediate forms between the form which bears small persistent cones and this one so abundant on the mountains, I can not yet answer clearly. In the parcel, which I send by the same mail with this letter, you will find a twig with rather small cones; they, like those

Rubus Ellipticus Sm.

Growing in Kew Gardens from E. Himalaya.

E. G. S. Knight.

up the other branch weighed with it, still adhere; but it is mainly because the cones from which they were taken, having been fallen early last winter, were not exposed to storms which would shake the other cones down. On the tree which yielded me the smaller cones, were to be seen a few scattered cones, of the growth of 1877 as I thought, but there were none older. Under the spruces everywhere the ground was strewn with the cones of 1878 of which you will find specimens loose in the package; on the trees were few remaining. So my observations of this trip confirm, as far as they go, your decision that the cones of var. rubra are chiefly deciduous the first winter.

I have secured specimens in flower of my hybrid oaks; all are still, permits an [illegible], or I am in

Rec Nov 28
Ans — 30

Inglis Oliver
Mycol
Spruce

East Charlotte, Vermont,
Nov. 23, 1879.

Dr. Geo. Engelmann,
My Dear Sir;

During the past season I have borne in mind the subject of our correspondence of last winter. Early in the summer I sent you fresh specimens of our mountain spruce, P. nigra, var. rubra. This appears to be the most abundant spruce in Vermont covering all the green Mountains. P. nigra is in swamps though they be mountain swamps. In August I was in Lower Canada on the St. Lawrence and the Saguenay rivers, on whose cold shores I saw none of this spruce, only nigra with long-persisting cones often less than an inch in length, and P. alba. This alba I should never again fail to recognize. I believe I have never seen it in Vermont, though I expect to find it within the State next summer. On an island of the Richelieu River 50 miles north of the Vermont boundary I last saw it coming home; there it

was growing with P. nigra, as further away.

The hybrid oaks received my attention. Of the one which was thought a hybrid between Prinus and alba I received flowers and fruit. On the grove where Q. alba and macrocarpa are growing intermixed I took flowers of many more bearing trees, but did not, as I suppose, get after a hybrid tree in spring. This fall, however, I gathered fruiting specimens from a tree which I take to be intermediate between alba and macrocarpa. I send you specimens. All in the parcel marked 28-87 & 28-94 are from one and the same tree and are the hybrid as I thought. Fruit and flowers of some of the more bearing trees mentioned above I send marked A1, A3, A4, & A5. If all are indeed alba, as I took them to be, they show a wide variation in the spring. The specimens marked 28-93 & 28-94 are all from one tree, the only one of the kind I ever saw. I took flowers of macrocarpa by your request, but before I came to further fruit the tree was felled. I send two forms of this species from the grove called 15. Also a form of Q. rubra from C. Champaign found while I was looking in vain for Q. ambigua. Could this last have been a hybrid? Thus far I find nothing but rubra and tinctoria. But I have much ground yet to explore.

In the parcel with the cards I put a number of my discoveries of the past season, which may interest you.

You will have specimens more mature, as desired, of the slender form of Isoetes echinospora, var. Braunii, from L. Champlain.

Trying for Sparganium simplex, var. fluitans, I send a specimen taken from a lake in the extreme ~~N~~ northern part of Maine.

I show you specimens of Michaux's Acer nigrum. I feel it would only be doing justice to the plant to restore it to the rank of a species. It grows not with the "rock maple", but in swamps and on low river-banks; if it runs into A. saccharinum, I have yet to see the evidence.

My opportunities for observation of all these matters will, I expect, be far better next year, if I travel through our northern forests, for Prof. Sargent in the interest of forestry and the 10th census.

Yours sincerely,
C. G. Pringle.

Rec Dec 30th
Ans Jan 1

Charlotte, Vermont.
Dec., 26, 1879.

Dear Dr. Engelmann;

I gladly embrace the liberty you give me to send you another bundle of plants, being the species you have marked on my list and a good number of Carices besides. I put in this time flowers of Acer rufinum, (this tree grows in Lake Land; on drier soil at Iowa A. saccharinum) and more bark of Quercus Prinus x alba, which you can see is very like that of some trees of alba. Of both the hybrid oaks and you I know only single trees.

Do not make such a return of plants as will bring me again deeply in your debt. Juncus dubius, and the other species 15 which you allude, I should be exceedingly glad

to have. The most of the oaks here of the Mississippi are represented in my vicinity, but I have not Q. lyrata, tridentata, prinoides, nor rubra, nor r. runcinata, and have very few that grow westward. Possibly you may be able to spare the Western South and western species of Marsilia. With Lewis's plants I am pretty well supplied, but Texas species are my great need.

I think we have in Vermont only Q. tinctoria, and not the typical variety at all.

It gives me pleasure to learn that you found my Lake Champlain Sorts so interesting.

Wishing you a Happy New Year and many more to come, I remain

Yours faithfully,

C. G. Pringle.

Plantago Rugelii is common here.

Rec Jan 13

Charlotte, Vermont.
Jan., 8, 1880.

Dr. Geo. Engelmann,

My Dear Sir:

I beg you not to let the making up of a parcel of plants for me give you too much trouble. Your friend planted one largely in your debt last year. In thought to easily the friend accurately quote and J. tuberiflis some might have come other for me. Senecio Huttallii I would be very glad to see, and the one or two others you allude to. These are all the new entries in my herbarium, — arenaria ellipsocarpa, cuspidata diversa, planulata, Greenii, Greenii var. laurina, rostrata, and tenuiflora. I am glad you can send some of the western Asters. It is very gratifying to hear that my plants pleased you.

Sincerely Yours,
C. G. Pringle.

Rec'd May 14th
Ans. sent day & May 17

Tucson, Arizona,
May 8th, 1881.

Dr. Geo. Engelmann,

My Dear Sir;

I am just in from a week's tramp among the Santa Rita Mts., and will lose no time in giving you the results of my efforts to find your advice with respect to searching out Pinus Arizonica. I flatter myself that by the aid of the instructions and notes given me by you, I was able to refer to its true place every pine met with there. The longleaved two one chiefly about the saw mill I took to be P. ponderosa, and one, of which I met with but a few specimens here and there, whose leaves were only two inches long, I judged to be an undoubtedly state of P. Ponderosa; its peculiar con-

ditions appeared to be due to fall itself.
From the saw-mill one day I turned to the left & climbed the mountain for nearly 800 feet above the mill and the following day I ascended to the right of the mill and passed over the mountain tops to the summit of Mt. Wrightson, the highest of this range; and after traversing three miles of mountain grows I judged the species of Pinus of which I send you by the same mail with this flowering specimen and cones (the latter of minimum size; on the more thrifty trees they were three inches long,) and which I suppose to be P. Arizonica, to constitute seven eighths of the pine timber of those mountains which is of size fit for sawing. The aneroid makes the altitude of the

saw-mill site 6000 feet; at this elevation there are but few specimens of this tree; but between 7000 and 8000 alt. it is abundant. Pinus ponderosa mingles with it near its lower limit, as, also, does P. Chihuahuana. Scattered specimens of P. Strobiformis bear it company throughout its entire range, up to 8500 feet on Mt. Wrightson. On certain grassy slopes and ridges high up on Mt. Wrightson and its neighbors are some noble groves of this P. Arizonica.

In another package I send you flowering specimens of such oaks as I have met with, four from the Sta. Rita Mts., two from the Sta. Catalina Mts. as indicated. Will you be so good as to tell me at your earliest convenience their names as nearly as you can? Quercus oblongifolia and hypoleucoides I feel certain about; but besides these Prof. Sargent wishes me to get the sections of Q. reticulata, Emoryi, and

grism, which he says grow on the Sta. Ritas. Should either of these be lacking in my set of specimens please show me a leaf of it, and if you could do the same for me with respect to Q. pungens, and Gambelii, it would aid me in identifying them, when I meet them, for I have no descriptions of these oaks with me. The species so near Q. alba (Garrisoni) grows on the very summits of the mountains mostly as a shrub in company with and similar in size to No 4 (at that height) but sometimes as a tree 15-feet high. (reduced)

Mr. Sargent has put on his list for me to collect Prunus Capollin, given in his Cat. as a synonym of P. serotina; on the Sta. Ritas I found a Prunus growing to a tree and sent with the oaks a specimen to ask if this is what he wants.

In a third parcel I send you specimens of a Maxillaria, which I thought might interest you, as it has a milky juice

May 5 1881

a passed flower is in this letter. I found a limited number of plants on the summits of those foothills around the mouth of the sawmill canon in the Sta. Ritas, which you may remember. They were growing firmly wedged into the slate and sandstone ledges of the hill-tops their crowns, 2 or 3 inches broad, seldom elevated above the surface of the earth.

My excuse for troubling you with some of these matters is that it requires a long time to get an answer from Boston, and I wish to return to the Sta. Ritas in about two weeks, hoping then to find in flower Pinus Strobiformis and Chihuahuana.

Dr. Parry has intimated to me the possibility of your coming into Arizona during this month; and I fondly wish you might accept a seat (and eat) in my covered wagon. We could travel almost at our ease with and friendly. With a good team and one or two men

I am living independently. I reached here just as the spring flora was bursting forth; and the strangeness of everything in this country and the multitude of species of plants, embarrassed me for awhile; but I am beginning to feel at home here. I am making 25-dolls, and have for them the first month about 170 species.

Arizona is even dryer than usual this spring, and there are few plants to be found except along the mountain brooks.

I am trying to do justice to the Cactaceae, as I hope to show you.

Yours faithfully,

C. G. Pringle.

Rec May 30th
Answered May

Tucson, Arizona.
May 24th, 1881.

Dear Dr. Engelmann:

Many thanks for your kind and full letters of the 14th and 17th. I am sorry and disappointed to hear of your illness; but you permit me to christ a hope that I may have the great advantage and pleasure of your company in this rich field. If you can come, there will be little need of your climbing the mountains; I will be leg and eyes for you, and bring down to you all the mountain yield; if, however, you find it quite impossible to come to the mountains, the mountain shall go to you, or as much as possible of it as I think you may wish to see.

So today I send you another parcel, — Queens prisoners to show you female

Q. Emoryi

flowers, and to prove the species *morpum*; Q. reticulata, female as well as male flowers; a Juniper — Santa Catalina Mountains, by Brooks, May 14th; a specimen of Greenella Arizonica, mise south of Sta. Catalina Mts., May 16; and a specimen of a Leguminous shrub or tree some 18 feet high, found in a canon of the Sta. Catalina Mts., May 16, 1881, which I am quite unable to determine.

Now that I am fully instructed by you in regard to the oaks of the Santa Rita Mts., I am on the point of returning there, and hope to find that I have calculated aright about the time of flowering of Pinus reflexa and P. Chihuahuana. I shall look further for such branches of the latter, as you mention; on my first visit there I found cones of three sizes, but those of medium size were in every instance dead, their growth having been arrested early in the growing season.

I purpose, also, to get larger cones of Pinus Arizonica. The specimens collected before were from a tree on a rocky knob and therefore small, and on my long hard tramp I did not bring down larger ones. I shall take with me your letter and proposal 15th this thus leaving the position I cannot now answer.

Mr. Lemmon has been in my company for the past week; he is confident he has sent you material from the Sta. Catalina sufficient to show that P. Arizonica is a state of P. ponderosa; so I must give the closer attention to the two species in the line of inquiry suggested by you.

In my general collection I am having good success; have more than 2 or 3 species for my sets.

Yours faithfully,
C. G. Pringle.

Rec June 6th
Ans — 7

Tucson, Arizona,
June 1, 1881.

Dear Dr. Engelmann;

I am just in from my second visit to the Santa Rita Mts, and will report as I am able. This time I explored Welischli Cañon, the ample canon southward from the saw-mill Canon and between the two principal mountains of the range. How I wish you had visited this one last year instead of the other. Its gently rising trail led up to the trees you wanted to see, and there are numerous specimens at hand for examination.

The Arbutus was in flower; and I send you specimens; as I do flowering specimens of Pinus reflexa and a young cone to show appearance at flowering time,

the latter in the roll with the cones of P. Arizonica. I examined a good many trees of P. Chihuahuana at its lower limit, 6000 ft, and concluded it had not yet come into bloom nor scarcely started into new growth.

Pinus Arizonica was all out of flower, so I was unable to get better male flowers than those sent you before; but I remembered your request for some specimens and help press cones, and secured specimens which I send in a roll.

Now for the position of P. Arizonica and P. ponderosa running into each other. Mr. Lemmon came in from the Sta. Catalinas in high spirits after I had sent off my specimens of P. Arizonica, and much disconcerted me by telling me that he had proven that P. Arizonica was a myth, only a state of the polymorphous P. ponderosa, and that he had sent you material to show this. He had taken a room next my house

and was with me, when your acknowledgment of the verity of my specimens came to hand, and I read him your letter, which caused him some chagrin, especially as you had not written him in the matter. But he believed I might find them on the Sta Rita being beams in 38, 46, and find a burnally.

For a time as I clambered over the heights of these mountains first below P. ponderosa all right with their long coarse leaves, not higher up P. Arizonica began to mingle with it, but the leaves of this were always in fives and slender. I could distinguish no difference in the appearance of the bark, and the sap-wood of P. Arizonica was finished to be remarkably thick like that of P. ponderosa. ~~The bark~~ ~~&~~ On neither did I find the cones alluring. The color of the young shoots of P. Arizonica was strongly resinous, but they were glaucous. The leaves of P. ponderosa remained ~~characteristic~~ characteristic and distinct as I passed

near the summit of Mt. Wrightson through a fine grove of pines, from 40 - 80 feet high and 2 - 3 feet in diameter. I judged I had left P. ponderosa below me, but shortly after in a depression on the crest of the mountain, 8000 ft. elevation, I was in a scattering forest of pines similar to those seen by Mr. Lemmon on the Summits of the Sta. Catalina. This from overall of the tree, which I forward to you in the roll, will show you what the tree was.

I expect soon to go again to the Sta. Rita, where I will further observe these two species.

Quercus grisea was abundant in Welisch's Canon from 4000 to 6000 feet elevation; and Q. reticulata found before above the saw-mill, 6500 ft. These descended lower, even scattering down to 4000 ft.; but the leaves were smaller and less toothed. These on the slopes of the summit and those on the spurs are not yet prepared to say that these two species quite meet in an intermediate state,

Jan 1st 1881

5

Q. fanchetii was more abundant here than on the saw-mill side of the mountain, and from 6 to 10 feet formed a large tree from 12 to 18 inches in diameter and some 30 feet in height.

The Arbutus was a common tree from 4 to 5000 to 7000 feet altitude, and was conspicuous on the mountain sides from its red old leaves just about to fall.

The Prunus was not rarely seen, usually a tree a foot in diameter and twenty feet high.

Quercus Lindeyi was abundant from 4300 to 5000: Q. oblongifolia on the foot-hills without scarcely entering the canons.

Vitis Arizonica was in flower all along the canons. I collected it a month ago in the warmer southern canons, but I am troubled to find the specimens in the bottom of my press pile.

Again Schottii I did not see, but it is now in flower in the Sta. Catalina, where on high slopes, 3000 to 4000 ft.,

June 1st 81

I have been fishing of late. Thus I have not been able to send living plants for you to be sent today; and if I go there this afternoon, as I expect to do, should get an abundance of flowering specimens. I go to look after a Cupressus very near, if not identical with Mr. Francis's C. Arizonica, which I have found in the cañons of these mountains.

I should add that as I expect I have on the Sta. Rita last few specimens of Pinus Chihuahuana, and as I before noted P. Ponderosa was growing scattered from 6500 to 8000 feet altitude.

In the parcel of pressed specimens you will find a young pine which I think must be either P. Arizonica or P. ponderosa. Pine young trees are to be found in the dry soil. The date for the specimens is May 28th.

Hoping to hear that your health is restored by this time, I remain, yours truly,

C. G. Pringle.

Rec June 16
Ans — 22

Tucson, Arizona.
June, 11th, 1881.

Dear Dr. Engelmann;

The privilege of a correspondence with you, while I am in this interesting field, is one, you may be assured, which I shall endeavor fully to improve despite pressure of work and the fatigued state in which I return to Tucson after a week's work among the mountains.

I am glad to have you set me tasks. Although you have as yet but little of them, I have collected a good number of Cactaceae, specimens of which with some observations made upon them I mean to show you at the end of the season. I have not dried you fresh plants, as I did intend doing, partly.

because it required considerable time to handle them, but more because at the time of their flowering I was much away in the Santa Rita, where I saw but few specimens.

The past week I have spent among the Santa Rita instead of the Santa Catalina Mts, as I proposed doing, when I wrote last. Five days in succession I climbed to the summits of the highest mountains; the aneroid indicated the highest peak of Mt. Wrightson to be 9850 ft. altitude, about 1000 feet below the summit of this peak, June 6th, I found an oak of which I send you a specimen, #7; there were a few trees, the largest 12 to 18 inches in diameter, low and stocky, growing near the form of Q. Sambucifolia but larger. Is it true Q. Sambucifolia? and is #8, which Lemmon brought from the Chiricahua

Mts., near New Mexico, the same as Q. Gunnisoni?

I gave more attention to Q. gracia and Q. reticulata, and became convinced that I had been taking a large-leaved form of the former for the latter species. Q. gracia is a variable tree varying on the one hand, I should say toward Q. gunnisoni, as Nos. 9, 10 and 11 would indicate (is #12 Q. gunnisoni? It is a shrub of a few feet on the mountain tops,) and on the other hand toward Q. reticulata. #13 I have been calling this latter species, but now believe to be Q. gracia, because between such forms of Q. gracia, as I have been sending you, and this is a gradation of slight differences as respects the leaf, and because the bark is that of Q. gracia. Q. reticulata is a much rarer tree than I have been saying; its range is from 6500 feet elevation, where it is a small bushy tree of 6 to 12 inches diameter and 15-20

20 feet higher, up to the very mountain summit where it is only a shrub of one or two feet. No. 14, ~~[illegible]~~ May 28th, represents the former state, No. 15, June 8th, forms of the shrub. Now I have no difficulty in distinguishing the two species; the bark of Q. prinus is furrowed or cracked, that of Q. utilis is scaly; the leaf of the latter is convex that of the former usually plane. The difference in the appearance of the two trees hard to describe is nevertheless striking.

No 16, June 8th, at 8000 ft elevation, I take to be Q. chrysolepis.

No 17. young sapling shoots of Pinus arizonica. I believe in P. Arizonica as a species. On the ranges of mountains among the Sta. Rita this time most transitional on P. ponderosa is more common than before even to their summits; and I saw less of the conifers than on my last visit. I think I saw

I saw none on Mount Graham

June 11th 85

almost invariably distinguish the two species at a distance. The leafy twigs of P. Arizonica are more numerous, 10 or 15 form an elongate or dense foliage; the leaves are shorter and finer. I now believe you are right about the tree, and hope to furnish you ere ample proof. I will attend to the positions noted in your letter of the 31st May, for I shall again to those mountains, and more than once. P. Chihuahuana had not yet come into flower.

I think — indeed I am scarcely any more persistent still on P. Arizonica, and are few or P. ponderosa.

I almost despair of getting young seedlings of pines; little rain has fallen here for the last two years, and this year is drier than ever, so that many plants now growing of the Oaks make but a poorly growth or do not appear at all.

#18 is a pine, found June 8th, I suppose to be P. edulis.

I cannot spare a young tree of Pinus ponderosa which had its bases in flower.

June 6th (Alt. 6000 ft.) I secured for you a few specimens of Vitis Arizonica in flower. June 10th, 6000 ft. above sea-level of Sta. Rita Mts., I came upon Thurberia in flower.

No 18 is a Cypress gathered the middle of April in the Santa Catalina Mts., a tree 20 or 25-feet high, and bark cracked vertically and transversely; the same, says Mr. Grunow, as found by himself in the San Francisco Mts. of E. Arizona, and called C. Arizonica. He now says "if our specimen is to be referred to some Mexican species not well known."

Mr. Grunow went off on exploring to our parts near San Francisco. I have written during time, — until I follow Thurber.

Mrs and Mrs. Lemmon have gone home to return here in August to hunt for n. sp. for which they are in a fever.

Yours faithfully,
C. G. Pringle.

Rec Sept 1
Ans — 22

Tucson, Arizona.

June 13th, 1881.

Dear Dr. Engelmann;

I wrote you two days ago and last evening came your interesting letter of the 7th. Some of the questions it contains you will find answered by my last, and the specimens sent with it.

Pinus Arizonica; nothing easier than to distinguish young trees of this species from those of P. ponderosa; young shoots in the former much more slender and flexuous, you will see; now I regret not putting the other for comparison; but I shall do all you advise — in time.

Perhaps my specimens will have answered, (before this reaches you,) your query if Q. Gambelii has always acute pinnatifid leaves here.

Has the Pinus ponderosa leaves? This question has occurred to me also, as I have noticed its thick and shining leaves, and I have been

putting it to the test itself. I can judge no better from the living tree, I think, than you can from the specimen sent you; now all the cones have the same appearance, and I incline to believe them accidental.

I sent a dried specimen of the Arizona Cypress in flower (hope I packed it it will not crumble;) as Mr. Green says my tree is identical with his, I am now going for wood specimens and will get pieces of the bark for you (and for my self.)

As I am in the way of getting at this primeval westward toward San Diego all the trees of the list Prof. Sargent put into my hands, it seems unnecessary to go, that I go to New Mexico, and Prof. S. proposes that I go into the Sierras of Cal. with a new list, as soon as I finish here, which may be in 4 or 6 weeks.

I would like to find in these mountains all the Mexican species (of trees at least) we know to be in Arizona or N. Mex. before I leave.

I enclose some of Lemmon's scintillating effusions.

Yours faithfully,

C. G. Pringle.

Rec June 25-81
Ans 28

Tucson, Arizona.

June 20th, 1881.

Dear Dr. Engelmann;

Your post-card of the 13th is found here as I come in from the Santa Catalinas. I send you dried flowers of the Yucca, from which you can see, I think, that the style is whitish; my recollection is to the same effect.

I am chagrined because I have not helped you more in the matter of Cactaceæ; the fact is, I have not been able to carry out all I undertook, though I have worked to my utmost ability. They have mostly flowered, having gone by with a rush about May 15th-20th. To attend to them thoroughly one should have nothing else to do. When I have

made specimens, I have endeavored to show young shoots with leaves; but of course this method is not so satisfactory to you as to have fresh specimens.

I find here an Alnus, the shape of whose leaves does not well agree with the description of A. oblongifolius.

In a cañon of the Sta. Catalinas I saw a shrub 12 feet high, which I take to be a Bumelia, but I can not make out the species.

I met with a oak there with peculiar leaves, the most remarkable thing about them being that last year's leaves are toothed, while those of this year are invariably entire.

I send a specimen of a Celtis, and the fl and fruit of the Rhamnaceous shrub to which you and Prof. Sargent directed my particular attention. It ripens its fruit just before flowering and the berries are eaten by some wild

animals. It is common in these valleys.

I have just got for you the bark of the Sta. Catalina Cupressus, so you can read its whole story. It forms a tree 8 to 12 inches in diameter and 20 to 25 feet in height, branching abundantly from near its base.

You must feel that it is in gingerly installments that the mountains are coming to you.

The canons of the Sta. Catalinas are now heated like a furnace; their vegetation withered; and the water almost dried up and so bad that it made us sick.

But I expect to try them again today.

Yours faithfully,

C. G. Pringle

P.S. Your post-card of the 15th comes in four days. The more the better! It was Pseudotsuga Douglasii which I spoke of lately as a "spruce". Cupressus you now know. Yes, though I work hard and flatter myself I am getting hold of this work, it will be little ground of this vast field I can cover even in two years.

Tucson, Arizona.

Rec'd Middle Park Sulph Spr July 20 Ans Aug 16

July 19, 1881.

Dear Dr. Engelmann. Last evening returned from Sta. Rita where I have been since the first of the month logging at the Museum logs. Few more days left for Arizona, for Prof. S. wants me to be in San Francisco as soon after the 25th as possible. Glad you have made the Day to me a book the Trees of the northern forests. As for Pinus Arizonica I firmly believe in it as a species; except in the one from I have told you of I can distinguish it from P. ponderosa at a distance; twigs more numerous, leaves usually shorter, rather yellowish green (ponderosa bluish green) but in the forms I was puzzled; this is the best I can say; - aside from the variability of ponderosa shown there, I think there must be some thus there which are hybrids between the two species. Have tributes gratefully and another. Shall write me in care of E. L. Greene, Berkeley, Cal. Must send you more specimens.

Yours faithfully, C. G. Pringle.

POSTAL CARD.

TUCSON JUL 19 1881 ARIZ.

U.S. POSTAGE ONE CENT

WRITE THE ADDRESS ON THIS SIDE—THE MESSAGE ON THE OTHER

Dr. Geo. Engelmann,
Pick House,
Empire City,
Colorado.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Rec Empire City Aug 13th 16 Sent to Sklonis
Ans ——— forwarded to Empire

Tucson, Arizona.
July 22, 1881.

Dear Dr. Engelmann:

Without knowing whether you are at home or when you will examine the specimens, I today endeavor to replace the parcel lost, and hopelessly lost, I fear, for it was fully prepaid at this P.O. and not franked. This fortunately I am able to do with respect to most of its contents in sending the fine specimens of Vitis Arizonica (both sexes) prepared especially for your use. Some of the specimens of this parcel, a good portion of them, were not in the former; the numbers of those left were the same as before.

accounted for in no other way as I can see, except by the hypothesis of hybridity. I send specimens from two trees. If I only could have had two or three days to travel those mountains and study this matter and collect where they were to be found, such specimens with young fruit as you advised it would have given me the greatest satisfaction, and I might perhaps have executed your commission; as it is, however, I firmly believe in Pinus Arizonica as a good species. When I left I was sure I should see it again; but here I find orders sending me to California in a few days. Mr. Gruen, Berkeley, Cal., will care for my mail at first.

After I am through with this work, I may return here and begin where I now leave off.

Ok. avail – pl. – only gets

I did find a Rhus in the Santa Rita; took it to be the same as one whose flowers I got in the Santa Catalina earlier. Another Rhus now in flower there I took to be R. aromatica, var. fr. I have a fine stock of Ribes grandiflorum, and another (small flowered) species with intercalated fruit – now in the Santa Cruz Valley. All these dried plants must now be shipped to Vermont with the rest – and wait till visited to see the light. I hope you will not be too much discouraged from indifferent success to set me any more tasks, lest I use away the spruces of the north east.

Yours faithfully,
C. G. Pringle.

I send you a post-card to Cole, as you desired; but I will repeat to make sure.

I was in the Santa Ritas the first twenty days of this month continuously, laboring at the museum sections of trees. Poor advantages for studying Pinus Arizonica, yet I climbed over to the pines you have before heard of. Except here as far as I could travel all around clear; nothing easier than to distinguish P. Arizonica from P. ponderosa even at a distance, its foliage a lighter green entirely without the bluish tinge of that of ponderosa; its leaf-bearing twigs twice as numerous; the color of the young shoots and character of the bracts very different, as you will see by the specimens; but in the grove in question I was confused. Some of the trees are to be explained, however, I believe, by the variability of ponderosa, some leaves in 4's and 5's (though 3 is the predominating number, I think, always; others can be/ seen

P.S. Now late is Pinus Chihuahuana in flowering! When I left the Santa Rita's the male flowers were but just beginning to burst their involucres even on trees in warmest aspects of Cousta ~~[illegible]~~ Lindo. So I shall have no fls of this species; but I found a tree in the condition which I show you by a branch included in the parcel with P. Arizonica, which goes to prove you are right in calling it a triennial (?) fruiting tree. The smallest cones were living, when I gathered the specimen. A week or two later I might get cones of four years on the same branch!

Rec'd Eagle City – Aug 13 Ans Aug 16

Tucson, Arizona.

August 1, 1881.

Dear Dr. Engelmann;

We have been some ten days without communication with the East by R.R. or except by telegraph and part of that time have been cut off from California. Such sublime and violet flowers I never saw before.

Possibly we are promised a mail from home again.

I improve the first opportunity to send you a panicle of flowers of Yucca macrocarpa, as you remarked of it that the fls. were unknown. I hope you will see them. Soon we shall get away from here; but it is hard, for the rain has changed the face of this country wonderfully, and many strange plants appear.

Yours truly, C. G. Pringle.

POSTAL CARD.

WRITE THE ADDRESS ON THIS SIDE—THE MESSAGE ON THE OTHER

U.S. POSTAGE ONE CENT

ST. LOUIS, MO. AUG 8 9 AM 7

Empire City Colo.

Geo. Engelmann, M.D.,

~~3003 Locust St.,~~

~~St. Louis,~~

~~Mo.~~

Air Sept. 16

San Francisco,

Aug., 29, 1881.

Dear Dr. Engelmann, Glad to hear from you once more by your letter of the 16th through Prince. Sorry to learn for Vitis Arizonica as altogether lost; when I get home, whither I have sent my Arizona colt, I can send you a complete spm. Yes, you are right about the twigs of Pinus Arizonica being much more slender and glaucous than P. ponderosa, the most noticeable distinguishing character.

Sorry to say I got no fls. of P. Chihuahuana. When I left the Mts. the pinole crops were hardly developed enough to show the stamens, and I fully expected to return again. This was July 15th. I now hope to go home by the way of Arizona at the end of the year.

I expect to sail for Oregon this morning; should you wish to write me there address in care of Henry Sutkerdorf, Portland. I have written Galen Clarke now on Shasta about the red fir cones you desire.

Yours faithfully, C. G. Pringle.

POSTAL CARD

WRITE THE ADDRESS ON THIS SIDE—THE MESSAGE ON THE OTHER

U.S. POSTAGE ONE CENT

SAN FRANCISCO AUG 2 10 A

ST. LOUIS MO. SEP 3 1 PM

Geo. Engelmann, M. D.,
3003 Locust St.,
St. Louis,
Mo.

Rec Sept 16.

Portland, Oregon.

Sept., 1st, 1881.

Dear Dr. Engelmann;

By this date you may be at home and may have seen the specimen of the Cupressus found by me in the Santa Catalina Mts. of Arizona. In the museum of the Univ. of Cal. at Berkeley the other day I was shown wood and bark specimens of the tree discovered to the north of Florence, A.T., and Mr. Greene assured me that the character of the bark was identical with that of the tree seen by him in the San Francisco Mts. It was light-gray and shreddy like that of Fraxinus pennsylvanica, which, as you will see that which I sent you from the Sta. Catalinas is red within and scaly. The two must be different species.

I arrived here last evening. Will have headquarters here for a month. Yours truly, C. G. Pringle.

POSTAL CARD.

WRITE THE ADDRESS ON THIS SIDE—THE MESSAGE ON THE OTHER

U.S. POSTAGE 1 CENT

PORTLAND OREG.

ST. LOUIS MO. STATION M

Dr. Engelmann, M.D.,
Cor. Locust St.,
St. Louis,
Mo.

Rec Oct 27
Ans 28

Portland, Oregon.

Oct., 18th, 1881.

Dear Dr. Engelmann;

By mail I send you corms of Abies amabilis and A. nobilis, hoping they will reach you in fresh condition for your measurements.

I came north to this region too early, since the rains (and of course the Mts. snows,) begin a month sooner than usual, thus hinder my work greatly. I shall have to stay three weeks longer I think.

Yours truly,

C. G. Pringle.

Ans Dec 12
Ans " " Wilkins Dec 17 [illegible]

Tucson, Arizona.
Dec. 7th, 1881.

Dear Dr. Engelmann;

In San Francisco on the 2nd inst. I received from Dr. Kellogg your kind letter of a recent date; as I failed to meet Mr. Green, I posted it to him on my leaving there.

Assuredly there are two species of Cupressus in Arizona; so widely different in habit characters cannot belong to the same tree! I forgot the name of the collector of the wood I saw in the Univ. of Cal. (I wrote you at the time; was it Trueblood?) but Mr. Green had acknowledged it the same as his. Dr. Perry says (of course you are aware of this, also,) that they

may be Mexican species already collected and described. It tells me they have to have a familiar look, as of them are growing in Mexico. I sent you a second time a specimen of the Sta. Catalina species with mature fruit together with Cereus hypolonus in fruit, and several forms, and in another parcel wood and bark specimens of the Cupressus of various ages. Is it possible you did not see them until you had them for a Lemon?

I am just from Colton from Dr. Parry, who has gone into quarters there. Am on my way home to Vermont for a few weeks at least. I would like to get my collection into shape for distribution, if possible. Will you please write me there and say what species you would like to receive, in naming besides your specialties of Cactaceae, Euphorbiaceae, Juncaceae, etc.? I greatly regret I should have scarcely any time for

the more profitable way of studying them out myself as far as possible. From Oregon I sent home a large box (some 25 cubic feet) of botanical (largely tree) specimens, and I have a large trunk full of Coniferous plants chiefly from the vicinity of Mt. Shasta.

I enclose the prospectus of an exploration of Alaska, Lieut. Schwatka's idea — he is to command the expedition, if it can be carried out. I called on him to apply, as the situation of botanist, but I am undecided whether it would be better for me to go to Alaska or to work in this southwest and enter Mexico as opportunity permits. Will you kindly advise me on this point?

Yours sincerely,

C. G. Pringle.

Rec Dec 30
Ans Jan 1st 1882

Charlotte, Vermont.
Dec., 27, 1881.

Dear Dr. Engelmann:

Having spent two days in putting up a mail parcel containing some plants of my Arizona (and California) collection as I now wished to submit to your examination, I sit down as soon as I can and tell you what I know about some of them.

But first let me reply to your recent favors:— No, I saw no Cupressus at least Mt. Santa. My visit to that region was quite a hurried one for two or three days, etc. Stopping at Lissom, or travelling on horseback among the mountains, I secured up about 175 species, among them two

on the [illegible] specimen of Lichen fontanesii
Mr. Frost's [illegible], [illegible] I left
collection in the recent fire. I found
four new Campanulas, [illegible] and
in Castle Lake [illegible] in the Cascades
[illegible] I suppose is
D. Bolandri. As also I saw an [illegible]
one Cupressus in the world, the [illegible] of
the St. Catherines, since visiting you
before about this I have done the
[illegible] of Frost the end [illegible]
its large [illegible]. I don't [illegible] in [illegible]
my friends [illegible] [illegible]
[illegible] at 10th [illegible], so very if, we
did not [illegible] [illegible].

Be again, [illegible] I brought
home no lichen cactus. If I [illegible]
[illegible], as I expect, [illegible] I [illegible] round
[illegible] to [illegible]?

Tuesdell, dear [illegible] [illegible]
[illegible] I will think seriously of spending
more than one week down in the

Dr. Vasey & Prof. Sargent

Dr. Sir: Should I distribute Polemonium Pinnatifidum, Gayophytum, & Amsinckia Grandiflora, if I find them in the collection?

[illegible] to distinguish between P. pinnatifidum and P. pulcherrimum, I am sure, you will puzzle to separate the rock, 2, 11, & 12, from K. like to be, until I concluded (from their following it,) that all the forms, and 9 & 10 besides were forms of K. grandiflora, and K. [illegible] was confined to the higher elevations, a line, of appearance of [illegible] on the Divide, [illegible] in the upper ends of the canyons. They are [illegible] of [illegible] elevation from Q. & K. [illegible] are [illegible] considerable. I [illegible] that there is a difference in the appearance of [illegible] but [illegible] is [illegible] in the [illegible] from dried specimens alone, I am very loath to pronounce decision, but I should feel better satisfied if I could [illegible] with you a week or more in the house of the Sierra Madre, before you come to

this conclusion. Then I have still to get a section of C. gigantea for the Museum, for what I got for this specimen was a tree of No 2.

Now to my [illegible]; you will be disappointed, when you see how small a share of Cactaceae I make; but I beg you to consider that I felt my duty to the Museum to be imperative, and to cull an array from this and other [illegible] flowers, when they were coming to this [illegible]. Will you judge that in showing both red and yellow fls. of No 2 I am [illegible] mingled species. Lemmon and I agreed in this that we could see no difference between the green plants with yellow fls. and the purple hued plants with red fls.

No 3. It's the Cereus fls that [illegible] with the [illegible] [illegible] from a [illegible] [illegible]; approaching further [illegible] and [illegible] conditions, the joints seem to become [illegible] and [illegible] spiny. [illegible] [illegible] [illegible] [illegible] with this I [illegible] [illegible] Yours truly, C. G. Pringle.

Rec'd Jan 13th
Ans — 15

Charlotte, Vermont.
Jan., 10, 1882.

Dear Dr. Engelmann:

Thanks for your letter of Jan., 1st and postal card of the 7th, with names of my plants.

1. Carex polyacanthus I should say forms clumps of 8-10 culms.

2. I am not positive over about the forms of this belonging to one species, but though it must be so, wish I had kept the forms separate.

3. Plant erect, bushy in sands of cliffs in deep canyons; what I took for the same plant, when straggling in damper situations was more or less spiny, more spreading.

Osmorhiza longistylis, L., var. B mutica, Eng., was growing some short distance, not

at all abundant, on the prairie bottom under 2-6 feet of water. I have but a few specimens, being burned along by an entomologist whom I joined at day in rising a parade.

124. Croton Texensis, var. I think such fruit as I have.

136. Euphorbia [illegible] a few [illegible] from as many plants.

Agave Palmeri. Since, on thus determining the yellow flowered plants from the Sta. Catalina, I must [illegible] such and, in opinion is of the one I found on the Sta Rita, and, from your saying [illegible] Palmeri from on the Sta Rita, I took to be that species. This is (was it in the same?) with the purple flowers from 10 or 12 ft. [illegible] the [illegible] in [illegible] by [illegible].

Compressors. Since you did not receive my bark specimens, it was a pleasure to be able to send again. I can send bark of an older tree than the one sent to New York. At Mr. Sargent's I saw the other day Mr. Francis's ~~bark~~ wood specimen and the bark was much like that of the juniper (and another) specimen I now show you; so I strongly suspect that the specimen I saw in Berkeley Univ. Museum, brought from Arizona by Dunn (if I mistake not) was from some Juniperus. As I remember it, it was just like a specimen of J. monosperma in Prof. Sargent's Museum.

Prof. S. wants me to go (under Prof. Rimpelly and himself) as botanist to the N. Pac. R.R. Co's Survey of the N. 10. might spend my summer there and my winters in the S.W.

I appreciate your kindness in giving

any name to one of the new Euphorbias. Shall be glad to visit you if possible, when returning to the S. W. I suppose I shall go in Feb. first or third? San Diego and Pima S. E. prob. after the Pima Dungeons.

Yours faithfully,
C. G. Pringle.

Please give me again the name of the 2 Zygophyllums; your letters are with my plants, etc., not yet arrived from [illegible]

No. Fly 1

Charlotte, Vermont.

Jan., 28, 1882.

Dear Dr. Engelmann;

When I crossed the sand waste between the Lake Beach and the shore of Coos Bay, Oregon, I remembered Mr. Sprague's mention of a Juniper which you saw there in his account of your journey published in the Gard. Chron., and looked for mature specimens, not knowing whether you found it in condition to identify. I found two species which I can not match by any specimens in my coll. I send you specimens of these and three others, my boy having come from Portland; also, specimens of an Erythraea I cannot place right. Glad you are in my belief that my Arizona Erythraea is not E. Douglasii. Mr. Watson thinks the Portland outlook along the N. Pac. R. R. not promising, and I don't want to go there; I much prefer to work in the S-W, and help you with Conifers, Cactaceae, Agaves, etc. I wish Mr. S. would supply me with Pringle.

POSTAL CARD.

NOTHING BUT THE ADDRESS CAN BE PLACED ON THIS SIDE.

U.S. POSTAGE ONE CENT

SAN FRANCISCO, CAL. FEB 1 4 PM 1900

WESTERN DIVISION FEB 1 3 PM 1900

JAN 1 CHAR

Dr. Geo. Engelmann,
3003 Locust St.,
St. Louis,
Mo.

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Charlotte, Vermont.
Feb., 6, 1882.

Dear Dr. Engelmann;

Thanks for the name of the fungi; a few years ago you kindly sent me your monographs on Juncus and so many species of your "Herb. Normale" as you had remaining. I was more so fortunate as I am more than the continuation of your paper on Oaks, and that on Agave I never saw at all. If I do not call on you on my way back, would it not be well for some botanist after me to look to the "11 x."?

Look it and send you more of the new Pyrenees, I know Dr. Gray had not enough for 100 g[illegible] specimens. I send Dibolius sp. again and perhaps with better point to ask if it is really T. Californicus.

Dear Alnica not to go north was as agreeable to me as I intend not to go. I need annual days more to go only to town home.

Very truly, C. G. Pringle.

POSTAL CARD.

NOTHING BUT THE ADDRESS CAN BE PLACED ON THIS SIDE.

Geo. Engelmann, M.D.,
3003 Locust St.,
St. Louis, Mo.

Rec May 2
Ans 5

San Diego, Cal.
April 24, 1882.

Dear Dr. Engelmann;

I have just returned from a tour of eighteen days and 300 miles extent mostly in Lower California. A part of the time I travelled with Parry and Jones, and of those time found Dr. Parry has written you.

Leaving the company of these gentlemen (Heaven save the mark with respect to the younger men!) at San Rafael, a little village 90 miles south east of here, where they returned homeward, I travelled east 30 miles to the summit of the central plateau of the peninsula, thence west of north 150 miles along the summit to Campo, just on this side the boundary, and thence 50 miles back to this place.

The altitude of the central plateau proper varies from 4000 to 6000 feet; it is an undulating region, the rock granite, little decomposed, and is studded thickly with granite knobs and ridges, often mere cumuli of rounded granite boulders. The soil is scanty, much of it being more than pulverized granite.

Before turning northward and at an elevation of 4500 feet from Pinus ponderosa was met with occupying the drier soil of the plains or depressions among the hillocks. After I had gone ten miles on the northward trail I began to see scattering specimens or clumps of Pinus Sabiniana. The elevation was about 3500 feet. Here this species was always confined to the dry and more granitic soil of the hills, while ponderosa soon became so

numerous as to form a thin forest, only the rocky hills it relinquished entirely to P. Parryana. Quercus Emoryi was associated with Pinus ponderosa, with Pinus Parryana occasional specimens of Quercus chrysolepis. Such was the character of the arboreal growth for 20 miles north of the point where P. Parryana was seen. When the highest elevation (6000 ft.) was reached P. Parryana became more multiplied; and P. ponderosa was reduced in size and number, for the next 20 miles P. Parryana was the prevailing tree covering the mountains of the country as far as the eye could reach in every direction with its dark bluish green foliage. As a young tree, conical in outline, symmetrical, its fine branches along set, so as to form a most ornamental tree. As age its top becomes more [illegible]ing, its outline erratic; it attains a height of 20 [illegible], rarely 40, feet and a

diameter of 12 – 18 sometimes 24 inches. Thus the exception in rare instances branches from the base. In a little patch we found a clean trunk some 14 inches in diameter which we secured for the Museum. When we descended to 4800 and approached within 250 miles of Campo, the species disappeared altogether and P. ponderosa was only seen straggling on distant mountain tops.

Of course I was too early for flowers of the pine, but I secured such specimens as I could, and send you specimens in a parcel with a strange gum (young plants and capsule) seen in dense clusters at base of trees on dry hills. Stalks 4–6 ft. panicle 8 inches broad and 18 long, close. I also send a piece of bark with wood of Pinus Parryana.

No Cupressus seen. Juniperus Col. in one locality. Yours faithfully,

C. G. Pringle.

Next address Colton, Cal.

Rec May 29
Ans June 11

Colton, Cal.
May 22, 1882.

Dear Dr. Engelmann:

I think the flower of Agave Schottii, which I surely dispatched to you, must have been in the parcel that was lost in the mails; but be patient, for I am planning to be amongst the Sta. Catalinas at the time of its flowering this year.

In the matter of the Agave from the backbone of L. Cal.; I am very glad to have that you consider it an undescribed species so I can have something good to show for the trip, since Jones wishes to appropriate to himself exclusively the Rosa (first — seen by me, first — touched by him,) and inasmuch as Mr. Sargent is displeased with me

for having ventured so long a trip, and will probably throw back upon me a large part of the expense of it.

Don't suppose that I did not try to get to you a mature plant and a panicle. Then, however, in the journey of 100 miles over rocky, untravelled mountains to get back to San Diego, I on foot in the worst places, was jolted from the wagon and lost; only the young plants onto you and two or three capsules came through. I should say that adult plants are 15–18 inches broad, the leaves therefore some 10 inches long and wider than yours in proportion. Yes, it is a paniculate species, the branches in the way of a. Palmeri, only short, not more than 3 or 4 inches long; I should say 6–10 flowers on each branch, for the panicle was dense, and the branches must be as numerous as in that species though close-out within the 15 inches mentioned;

though so short — they branch again, I should say as in A. Palmeri. I recollect nothing of vestiges of flowers about the capsules.

Now I long to return to that strange country, and I may yet be able to tell you all about this plant and show you specimens.

I have just — come in from a most enjoyable ten days' trip to the Mojave Desert for Yucca ~~baccata~~ arborescens, etc., bringing home some 50 species for my sets among which are a good number of choice things and an undescribed Lupinus, probably.

Soon I shall go to Arizona for a few weeks.

I began to find Jones a disagreeable botanizing companion from the first; and after a few days his conduct became almost intolerable, and took away nearly all my pleasure in the trip; but for the genial companionship of

kind and pattern Dr. Parry, I should have been miserable. I gave Jones much good advice, but fear it was wasted.. It is mortifying to know that he has become so conspicuous abroad as an American collector. Barbey writes to the Parish Bros, — "We are very much displeased with Marcus E. Jones delivering & stand here for Americans, but have nothing to say before such clear and outrageously delineated plants as his!"

Thanks for your Isoetes paper which I shall hope to live to study.

No forgetting of Engelmann, you may be assured.

Yours faithfully,

C. G. Pringle.

Colton, Cal. Ser Jun 6

May 31, 1882.

Dear Dr. Engelmann,

I wish to show you a few things.

Cat. Pines

1. Wilmington Cal., March 31.
2. Tejon Pass, Cal., May 13, 1882. G. Coville
3. " " " G. Kellogg
4. Mojave Desert May 12 Ephedra Nevadensis = antisyph.
5. C. Cal. April 10, 1882. Ephedra californica
6. Hills of Mojave Desert, Quercus, 15-40 high on foothills in decandra.
7. Hills of San Diego Co., April 18. Quercus dumosa

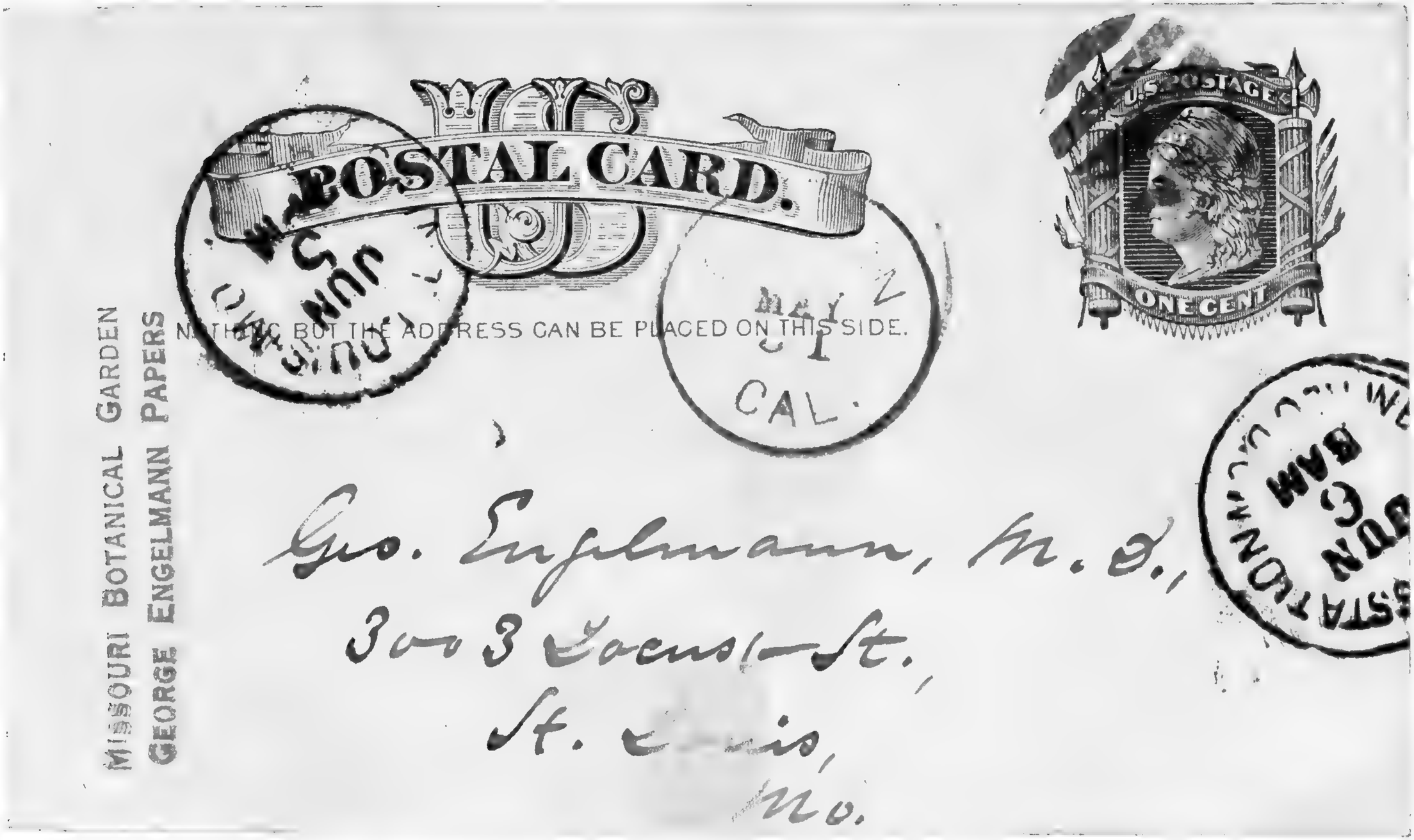
About San Diego I saw the choicest species, you were so good as to point out to me. Mammillarias just in flower, specimens to follow later and when I get labels, if desired.

Now I am off for Arizona.

Yours faithfully,

C. G. Pringle.

Tucson, Arizona.

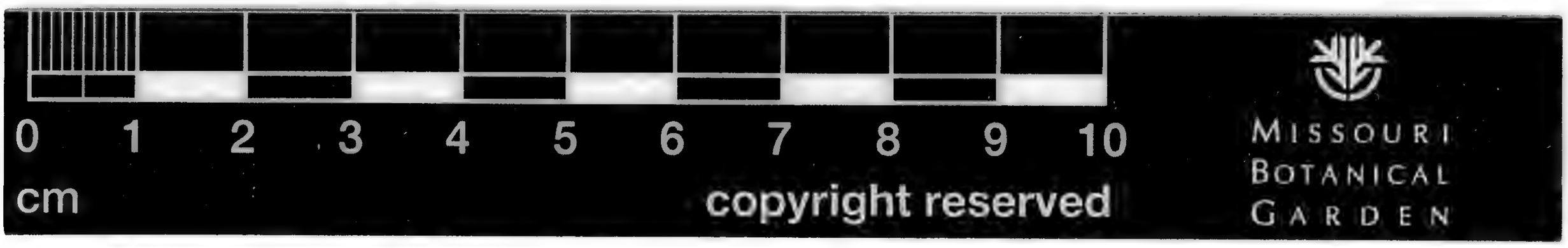


Recd June 15
Ans P.C. Jun 17 & 21

Tucson, Arizona.
June 10, 1882.

Dear Dr. Engelmann;

More to say about the Cupressus of the Sta. Catalina Mts. You may remember my trying repeatedly last year but in vain to follow up the streams on which I found a few small trees and thus to penetrate to an interior valley, where I thought to see more of this tree. On a recent visit to those mountains by going over the mountains from a different direction I was able to reach this valley, and there I was delighted to find the Cypress ~~tree~~ in its home and in its full glory. With Platanus wrightii, Alnus oblongifolia, Fraxinus pistaciaefolia, etc., it formed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MISSOURI
BOTANICAL
GARDEN

narrow belt of forest along the streams. Specimens two or three feet in diameter were not rare and we measured one whose circumference was 13 feet at four feet from the ground. The stems were straight and numerously furnished with branches of moderate length, spreading nearly horizontally. The height of these trees was 50 to 75 feet; their outline rather narrow. The bark of these old trees was deeply furrowed.

1. By mail I send you a piece of Cupressus bark;
2. A specimen of a Juniperus, in the hope that you can tell the species from so young fruit;
3. Flowering specimens of a Pinus also from those mountains, known in them as all the two examined, rarely in fours;
4. And a piece of flowering spike of Agave Schottii, which I could not keep fresh.

Should have my mail come here for a week or two longer, then may it come care of Dr Parry. Yours sincerely,

C. G. Pringle.

Rec Aug 2d
4

Santa Cruz, Cal.
July 27th, 1882.

Dear Dr. Engelmann:

Fifteen miles north from this city on the mountains is a district known as Pine Flat; there, thinly scattered over a tract about a mile in extent, composed of poor and dry sandy slopes and knobs of granite, grows a Cypress in company of Pinus tuberculata, arctostaphylos tomentosa, and other shrubs. In those places, where the soil is thinnest, it is only a shrub or small tree, branching at the base; but in one place, near the house of Mr. Battles, where the soil is comparatively fertile and moist, it attains a height of 30 or 40 feet and a trunk diameter of 18 inches. With

trees of this size I can get an idea of the habit of the species, which I could not do with the miserable dwarfs of the hills near Monterey. This appears quite different from that of the tree of "Monterey Cypress" of similar stature and common in plantations in this state.

The branches are more divided, so as not to present so virgate an appearance; and the color of the foliage is, I think, not so deep a green.

In two parcels by mail I send you 1st a piece of wood with the bark attached, 2nd, a piece of bark from the foot of the tree (bottle from the same tree, — one of the larger cut for the Am. Museum) and various twigs with cones.

I expect to return tomorrow to San Francisco, and to go soon to Mendocino C. Address for another month care Academy of Sciences, S. F. Yours faithfully,

C. G. Pringle.

Rec Nov 6th

Capital House,

WM. H. SPAULDING, Owner and Proprietor.

$1.50 and $2.00 per day, $7.00 to $10.00 per week. } According to location of rooms.

Madison, Wis., Nov., 4th, 1882.

Dear Dr. Engelmann;

I have abruptly dropped the Museum work, and am on my way home. I am sorry I could not have kept to my resolution to worry through to the end of it; but the Sargent became intolerable, and I was not able otherwise to maintain my self respect. Since I declined a second time last spring to continue in his service, and engage for several years on the N. Pac. R.R. Survey, I have been unable to please him. He demanded impossibilities of me; is angry because I did not get together everything required by July; charges me with having made ~~my~~ ~~and add~~ the work of the Museum incidental to my own collecting; dis-

regards my assertions to the contrary and my explanations; and, finally, with the approval of my bills (thus leaving me without funds,) in order to bring me to time.

I was anxious to call on you, as I passed; but it was necessary for me to use my pass, which took me as far as Chicago, and return them to Brooklin without delay.

I have not heard from you since your return from the east, or rather since your study of my specimens of Cupressus, but think it probable that a letter will be returned to me from California.

I enclose you more material of the Agave sent for me by the orcutts of San Diego.

On reaching home will send fruit of Quercus parvifolia; but the catyledons are split.

Has your recent study of Sphaeria caused you to change your opinion of those I sent you named by you at the time of California and C. Neuadensis? Yours faithfully,

C. G. Pringle.

Rec'd Nov 17
Ans — /30

Charlotte, Vermont.
Nov., 11th, 1882.

Dear Dr. Engelmann;

I was very glad to find your letter of the 7th in Charlotte, when I reached here after a few days absence — by the way in Wisconsin.

Sitton also had come home of Oct., 10th, sent after me by Dr. Parry via Tucson.

First concerning the Agave. I confess, when I received Orcutt's material, I felt misgivings lest it might be A. deserti. The specimen looked different from my recollection of the plants I saw. The branches of the panicle were so much longer than those of the panicle I pottered, and the capsules were longer and narrower, with like those of A. deserti. The

Tufts of the leaves around water. You Orcutt must have collected very near the same locality as I did.

But did I not tell you at first that what I took was a narrow panicle? You quoted my words thus, — "panicle 8 inches broad and 18 long." In panicle, capsule, and leaf Orcutt's plant is not different, (so far as I can see,) from A. deserti; the flowers I could not compare; do you judge them to be the same? If so, the question still remains, — did Orcutt find my plant? I presume he did. So you think so?

Queen Emma: yes, I saw it on the mountains of L. Cat., at 4,500 — 5,500 feet elevation, and told Dr. Parry; did I forget to report it to you?

Now for Cupressus. I am glad you keep C. macrocarpa distinct from C. fornicum. I did not

besides you sufficient without it
with the two, though I believe it is
it to be found. How I wish I could
have explored along the coast - more
than three or four miles, as I did at
Mendocino. Mr. Sargent was displeased
with me for giving so much time to
Cupressus; it was four weeks, during
which time I gathered and shipped
eleven large tho. sections.

I do not know whether the three
species of Cupressus in California shed
their pollen in autumn or in spring. This
position presents itself to me also; I am
sure that the male flowers become fully
formed in autumn. I saw them more
advanced in C. Macnabiana than
in the other two. I think that I ob-
served certain trees of C. Macnabiana
to bear a proportion of male flowers and
and a small proportion of cones, and
not to be doing the same; but I must

received any other pr. hints of diœcism among Cypress. Last autumn on Mt. Hood I saw the male flowers of Chamæcyparis Nootkatensis so far matured as to suppose that they would shed their pollen before winter; but Galen Clark of Yosemite, who was with me, judging from the similar behavior of Juniperus Californica was sure they would wait till spring.

Thus the specimens you have only matured old cones is only accidental; under if any specimens show both old and new, the latter may be found.

No transition observed by me between C. Macnabiana and the two of C. Sargentii by the stamen below. I noted from the habit of the two was very different.

J. A. Miller told me where he got his specimens he found you, — but a few miles from hills beside the same stream — Kelsey Creek, but he appeared to be in much confusion as to species of Cypress.

I send you by mail two specimens of oaks. The fruit is from the same tree you thought to be Q. prinoides var. prinoides; hills bordering the Mojave Desert, Cal., Oct., 21. The cotyledons, as far as I examined them were distinct, not united. Is this the same as you received from Orcutt? Shall I distribute it as above?

The other specimen (from the same locality) is from a strange tree, which I cannot understand unless on the hypothesis that it is a hybrid between the one mentioned above and Q. oblongifolia, both of which are growing in the vicinity. The tree was as large as Q. oblongifolia, more than two feet in diameter and 30 or more feet high. Its bark was like that of Q. ob-

longifolia not scaly like Q. pungens to whose leaves its falling leaves do show resemblance. Q. pungens in that vicinity attains a diameter of 3 to 12 inches and a height of 8–15 feet.

Yours sincerely,

C. G. Pringle.

Rec Jan 5th
an — 12

Charlotte, Vermont,
1, Jan., 1883.

Dear Dr. Engelmann;

I send New Years greeting and assure you I am glad to hear from you again by your card of the 27th Dec., and especially glad to hear that you find the L. Cal. Agave distinct. How I shall distribute it.

I send you leaves. You may notice that the teeth are deciduous, or at least fall easily away, or as to be mostly wanting in adult plants.

Some other things go with these;—

Twigs of Pinus Chihuahuana got on the Santa Rita Mts, June 24; They show the male aments not yet perfected.

A Rhus glabrum in flower same place and date; is this the plant to which you direct my attention?

A perennial Euphorbia (?) from the mesas of Arizona, June 26.

and an annual Euphorbia from the Santa Cruz Mts., Cal. July 26. Lepto pera

and, finally, a little Erythraea from near San Diego, May 8.

Greatly desiring your photographs, I send mine;

And send my list of 1882. If this contains anything you would like please let me know.

I cherish the purpose of returning to the Southwest, if I can sell plants enough to nearly pay expenses; but hardly expect to get nearly to have by next spring.

Yours sincerely,

C. G. Pringle.

Rec Jan 22

Charlotte, Vermont.
17, Jan., 1883.

Dear Dr. Engelmann;

Thanks for the names of the Euphorbiae, etc.

I cannot recollect whether I sent you my lists for 1881, or for 1882, or both; and therefore am at a loss to know which set you will take, according, I send you both lists now. I can spare you a set of 1881, and I have many of the others still on hand since I made up 22. I will not open the sets to take out what you have had but will put down the price to you, — say $30. for set of 1881 and $35. for that of 1882, or $60. for both. They are bulky, and must go by express.

I have not in the Cuscu

abandoned my purpose to botanize in our Southwest and in Mexico extensively, and to study under your direction the Cactaceae, Agaves, Conifer-ae etc., of those regions. I wish to stay at home till I can put my collections nicely mounted and arranged in my herbarium, and until I can obtain pledges of sufficient patronage to much pay my expenses.

Glad you can establish Agave Bigelii.

Yours sincerely,

C. G. Pringle.